

## Claims

1. An RFID reader system comprising one or more transceiver modules for communicating with a plurality of RFID tags, a control unit having a reference frequency generator for providing a reference frequency to said one or more transceiver modules, a control bus connecting the control unit to said one or more transceiver modules for communicating with said one or more transceiver modules and the control unit having a communications port allowing the control unit to communicate with an application host system.
2. A system as claimed in claim 1, comprising a plurality of transceiver modules, the control unit providing a common reference frequency to said transceiver modules.
3. A system as claimed in claim 2, wherein the control unit can control at least one of the transceiver modules to read one or more of the plurality of tags.
4. A system as claimed in claim 3, wherein the control unit can control the transceiver modules to transmit individually or in groups or simultaneously.
5. A system as claimed in claim 3 or claim 4, wherein the control unit can control each of the transceiver modules to be activated in rotation, or in a random or pseudo-random sequence to read one or more of the tags.
6. A system as claimed in any one of claims 1 to 5, wherein the or each transceiver module is provided with a direct digital synthesiser or phase locked loop synthesiser, which takes its reference from the reference frequency transmitted from the control unit, to generate an operating frequency.
7. A system as claimed in any one of claims 1 to 6, wherein the transceiver modules are provided with antennas, the antennas being arranged so their radiation patterns overlap each other thereby providing continuous coverage of a desired reader volume.

8. A system as claimed in any one of claims 1 to 7, wherein one or more, but not all, of the transceivers are arranged to transmit an energising signal while one or more of the other transceivers have their receivers active to serve as diversity  
5 receivers.

9. A system as claimed in any one of claims 1 to 8, wherein the frequency of at least one or more of the plurality of transceivers has its reference frequency offset from the others thereby providing a low frequency beat note which  
10 can be adjusted to fall below the cut off frequency of the detector in the tags.

10. A system as claimed in claim 9, wherein said reference frequency offset is achieved by adjusting the phase lock loop synthesiser reference frequency by means of the Direct Digital Synthesiser under control of the control unit.  
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11. A system as claimed in any one of claims 1 to 10, wherein each transceiver module is connected to its own antenna by a coaxial feed line.

12. A system as claimed in any one of claims 1 to 11, wherein the  
20 frequency reference signal from the control unit is fed to each of the transceivers by means of a flexible coaxial cable.

13. A system as claimed in any one of claims 1 to 12, wherein two or more of the transceiver modules are arranged facing each other on either side of a  
25 volume to be interrogated, whereby controlling the modules to transmit simultaneously at the same frequency creates no beat note between the transmitted carrier frequencies so that no deep modulation nulls occur in the energised field to interfere with the communication between the reader transceivers and the tags.

14. A system as claimed in any one of claims 1 to 13, wherein at least two  
30 of the transceiver modules are arranged at right angles to each other defining a cubic reading zone by overlapping fields from the antennas of the transceivers.

15. A system as claimed in any one of claims 1 to 14, wherein the transceiver modules can adjust their output power level in order to change the operating or reading range of the module.

5           16. A system as claimed in claim 15, wherein the control unit can control the radiated power levels from individual reader modules to be set differently in order to adjust the shape and phasing of the reading zone formed by an array of the reader transceiver modules.

10           17. A method of reading tags, comprising the steps of providing a plurality of transceiver modules with a common reference frequency, and controlling at least one of the transceiver modules from a control unit to read one or more of the plurality of tags.

15           18. A method as claimed in claim 17 including controlling the transceivers to transmit individually or in groups or simultaneously.

            19. A method as claimed in claim 17 or 18, including the step of controlling each of the transceiver modules to be activated in rotation, or in random  
20 or pseudo-random sequence to read one or more of the tags.

            20. A method as claimed in any one of claims 17 to 19 including one or more, but not all, of the transceivers transmitting an energising signal while one or more of the other transceivers have their receivers active to serve as diversity  
25 receivers.

            21. A method as claimed in any one of claims 17 to 20, including controlling the frequency of at least one or more of the plurality of transceivers to have its reference frequency offset from the others thereby providing a low frequency  
30 beat note which can be adjusted to fall below the cut off frequency of the detector in the tags.